

What is claimed is:

1. An electronic alternating-current regulator for supplying a high-voltage direct current for activating a discharging light tube for steady illumination, comprising a power circuit, a voltage control
5 circuit, an activation circuit, an over-voltage/leakage protection circuit and a load circuit; wherein:

the power circuit is connected to an alternating current, and is consisted of an LC voltage-regulating circuit and a bridge rectification circuit, thereby transforming the alternating current into
10 a direct current;

the voltage control circuit is connected to an output end of the bridge rectification circuit of the power circuit, and utilizes a power factor rectification integrated circuit (IC), an inductor and a transistor to control an output voltage of the direct current;

15 the activation circuit is connected in parallel with positive and negative ends behind the voltage control circuit; and has at least two serially connected transistors, a bi-directional thyrator connected to a base of the first transistor and an RC circuit, thereby controlling the current passing through the first transistor and the second transistor;

20 the load circuit has at least one light tube, which has an output end

of a first side thereof connected to a positive end of the voltage control circuit, and an output end of a second side connected to a node of an emitter and collector of the serially connected transistors of the activation circuit via inductors; and is connected in series to a pre-warming activation matching circuit located between an output end of the first side and an input end of the second side of the light tube.

2. The electronic alternating-current regulator in accordance with claim 1, wherein the load circuit has two light tubes to form a set; an input end of a first side of a first light tube is connected to a positive end of the voltage control circuit; an output end of a second side of a second light tube is connected to a node of an emitter and a collector of the two serially connected transistors of the activation circuit via the inductors connected in series; a pre-warming activation matching circuit is connected in series between an output end of the first side of the first light tube and an input end of the second side of the second light tube; a secondary side coil of the inductor is connected in series between the second side of the first light tube and a first side of the second light tube.

3. The electronic alternating-current regulator in accordance with claim

1, wherein the load circuit has two light tubes connected in parallel to form a set having one more light tube connected in parallel; an input end of a first side of a light tube is connected to a positive end of the voltage control circuit; an output end of a second side of a second light tube is connected to a node of an emitter and a collector of the two serially connected transistors of the activation circuit via the inductors connected in series; and a pre-warming activation matching circuit is connected in series between an output end of the first side of the first light tube and an input end of the second side of the second light tube.

4. The electronic alternating-current regulator in accordance with claim 2, wherein the load circuit has two light tubes connected in parallel to form a set connected in parallel to another set having two light tube connected in parallel; in input end of a first side of a first light tube of the latter set is connected to a positive end of the voltage control circuit; an output end of a second side of a second light tube is connected between the two inductors in series connection with an output end of a second side of the former set via an inductor; a pre-warming activation matching circuit is connected in series between an output end of a first side of the first light tube and an

input end of a second side of the second light tube; and the second side of the first light tube and the first side of the second light tube are connected in series to a secondary side coil of the inductor.

- 5 5. The electronic alternating-current regulator in accordance with claim 1, wherein the pre-warming activation matching circuit is consisted of a variable capacitor and a capacitor connected in parallel, such that the current is passed through with delay using shielding of the variable capacitor and the capacitor to accomplishing pre-warming effects.
- 10 6. The electronic alternating-current regulator in accordance with claim 2, wherein the pre-warming activation matching circuit is consisted of a variable capacitor and a capacitor connected in parallel, such that the current is passed through with delay using shielding of the variable capacitor and the capacitor to accomplishing pre-warming effects.
- 15 7. The electronic alternating-current regulator in accordance with claim 3, wherein the pre-warming activation matching circuit is consisted of a variable capacitor and a capacitor connected in parallel, such that the current is passed through with delay using shielding of the variable capacitor and the capacitor to accomplishing pre-warming effects.
- 20 8. The electronic alternating-current regulator in accordance with claim 4, wherein the pre-warming activation matching circuit is consisted of a variable capacitor and a capacitor connected in parallel, such that the current is passed through with delay using shielding of the variable capacitor and the capacitor to accomplishing pre-warming effects.

effects.

8. The electronic alternating-current regulator in accordance with claim 4, wherein the pre-warming activation matching circuit is consisted of a variable capacitor and a capacitor connected is parallel, such
5 that the current is passed through with delay using shielding of the variable capacitor and the capacitor to accomplishing pre-warming effects.

9. The electronic alternating-current regulator in accordance with claim 1, wherein an over-voltage / leakage protection circuit is connected
10 in parallel between the voltage control circuit and the activation circuit, and has a PNP transistor (one-directional transistor) disposed between the first transistor and the base end of the bi-directional thyristor of the activation circuit, thereby having the PNP transistor serve as a protection switch over operations of the
15 activation circuit.

10. The electronic alternating-current regulator in accordance with claim 2, wherein an over-voltage / leakage protection circuit is connected in parallel between the voltage control circuit and the activation circuit, and has a PNP transistor (one-directional transistor)
20 disposed between the first transistor and the base end of the

bi-directional thyristor of the activation circuit, thereby having the PNP transistor serve as a protection switch over operations of the activation circuit.

11. The electronic alternating-current regulator in accordance with claim

5 3, wherein an over-voltage / leakage protection circuit is connected in parallel between the voltage control circuit and the activation circuit, and has a PNP transistor (one-directional transistor) disposed between the first transistor and the base end of the bi-directional thyristor of the activation circuit, thereby having the PNP transistor serve as a protection switch over operations of the
10 activation circuit.

12. The electronic alternating-current regulator in accordance with claim

4, wherein an over-voltage / leakage protection circuit is connected in parallel between the voltage control circuit and the activation
15 circuit, and has a PNP transistor (one-directional transistor) disposed between the first transistor and the base end of the bi-directional thyristor of the activation circuit, thereby having the PNP transistor serve as a protection switch over operations of the activation circuit.

20